

Butter Prices
A Comparison of CME and California Prices
December 2004

Data Collection

Data was collected from five butter plants, representing sales of salted bulk butter from January 2001 to September 2004. The five plants reported monthly sales volume (pounds) and sales revenue (dollars) for the 44 month period. The pounds and dollars were totaled across all five plants for each month. A monthly California weighted average price was calculated by dividing the total dollars by the total pounds. Each monthly average reflected sales from the 1st to the last day of a given month. As for the California weighted average price for NFDM (CWAP), prices for all months would have been influenced by the effects of any long-term contract sales.

These California prices were compared to the CME prices used in calculating the Class 4a fat price. The CME butter prices were the "simple average of the Grade AA butter price quotations for the last significant trading action for sale, offer or bid at the Chicago Mercantile Exchange falling between the period beginning the 26th day of the previous month and concluding the 25th day of the current month."

Data Analysis

For each of the 44 months, the CME butter price for one month (t) was subtracted from the California butter price for the same month (t):

$$\text{Butter Differential}_t = \text{California Butter}_t - \text{CME Butter}_t$$

Results

The following table summarizes the results:

Summary of Results: CA less CME	
Average $\pm 1\text{SE}$	-\$0.031 ± 0.004
Median	-\$0.029
Range	-\$0.047 to +\$0.033

Detailed monthly averages and differentials are presented in the attached *Table 1*. For comparison, data from previous studies in 1994-95 and 1996-97 are also included. The attached *Figures 1 and 2* graph the data from *Table 1* on a monthly basis.

Figure 1 shows the monthly averages for the California and CME butter prices. In *Figure 2* the monthly differentials are shown as open circles. The averages for all three time periods (94-95, 96-97, 01-04) are shown as heavy lines with the actual average values given in boxes. Rolling 12-month centered averages are shown as a thin line for the 2001-04 period. While the averages clearly differ among the three time periods, the 12-month centered averages do not indicate any temporal trend for the 2001-04 period.

The box labeled "Butter and Cheese" in *Figure 2* shows a combined average differential and standard error for both butter and cheese: $-\$0.028 \pm 0.003$; on a statistical basis there is no significant difference between the average cheese differential and the average butter differential. This may be happenstance rather than an actual trend. Historically (94-95, 96-97) the two differentials were very different.

**Table 1 - California and CME Butter Prices and Price Differentials
Various Monthly Periods, 1994 to 2004**

CME California Differential California a_t less CME				CME California Differential California a_t less CME			
1994 Jul	0.715	0.662	-0.053	2001 Jan	1.211	1.185	-0.026
Aug	0.755	0.703	-0.052	Feb	1.351	1.354	0.002
Sep	0.757	0.710	-0.047	Mar	1.534	1.511	-0.024
Oct	0.757	0.712	-0.045	Apr	1.773	1.770	-0.003
Nov	0.758	0.709	-0.048	May	1.875	1.848	-0.027
Dec	0.707	0.680	-0.027	Jun	1.968	1.938	-0.029
1995 Jan	0.650	0.652	0.002	Jul	1.900	1.873	-0.027
Feb	0.706	0.660	-0.045	Aug	2.045	2.045	0.000
Mar	0.720	0.675	-0.045	Sep	2.153	2.080	-0.074
Apr	0.720	0.680	-0.040	Oct	1.492	1.387	-0.105
May	0.720	0.680	-0.040	Nov	1.327	1.302	-0.025
Jun	0.751	0.708	-0.043	Dec	1.287	1.271	-0.017
Jul	0.800	0.760	-0.040	2002 Jan	1.350	1.315	-0.035
Aug	0.850	0.802	-0.048	Feb	1.254	1.221	-0.034
1995 Sep	0.873	0.826	-0.047	Mar	1.248	1.218	-0.030
				Apr	1.184	1.141	-0.043
1996 Jul	1.515	1.490	-0.025	May	1.068	1.022	-0.046
Aug	1.530	1.484	-0.046	Jun	1.045	1.015	-0.030
Sep	1.530	1.487	-0.043	Jul	1.026	0.994	-0.032
Oct	1.418	1.332	-0.086	Aug	1.000	0.962	-0.038
Nov	0.831	0.748	-0.083	Sep	0.959	0.934	-0.025
Dec	0.794	0.741	-0.053	Oct	1.023	0.985	-0.038
1997 Jan	0.902	0.854	-0.048	Nov	1.037	0.993	-0.044
Feb	1.066	0.997	-0.069	Dec	1.114	1.087	-0.027
Mar	1.158	1.125	-0.033	2003 Jan	1.098	1.063	-0.035
Apr	1.036	0.971	-0.065	Feb	1.047	1.039	-0.009
May	0.955	0.900	-0.055	Mar	1.082	1.053	-0.029
1997 Jun	1.129	1.090	-0.039	Apr	1.092	1.058	-0.033
				May	1.089	1.058	-0.031
				Jun	1.110	1.071	-0.040
				Jul	1.183	1.131	-0.052
				Aug	1.184	1.132	-0.051
				Sep	1.165	1.126	-0.039
				Oct	1.183	1.156	-0.027
				Nov	1.200	1.171	-0.029
				Dec	1.296	1.253	-0.043
				2004 Jan	1.374	1.371	-0.003
				Feb	1.658	1.629	-0.029
				Mar	2.128	2.026	-0.101
				Apr	2.205	2.089	-0.116
				May	2.096	2.129	0.033
				Jun	1.916	1.922	0.006
				Jul	1.782	1.800	0.018
				Aug	1.563	1.548	-0.015
				Sep	1.737	1.720	-0.017
				2004 Oct	1.686		

Figure 1 - BUTTER PRICES
Monthly California Weighted Average (1st-31st) and CME (26th-25th)

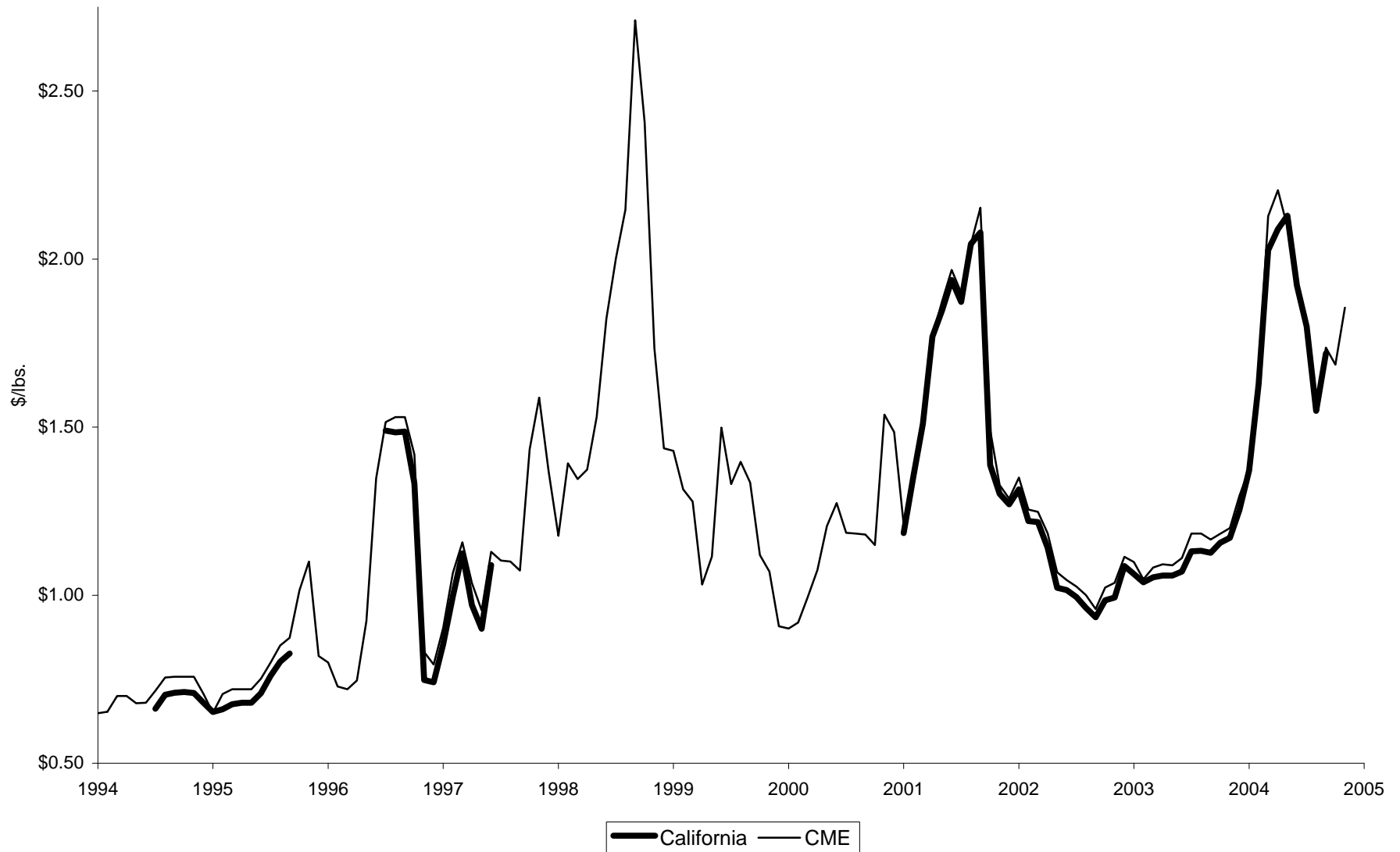
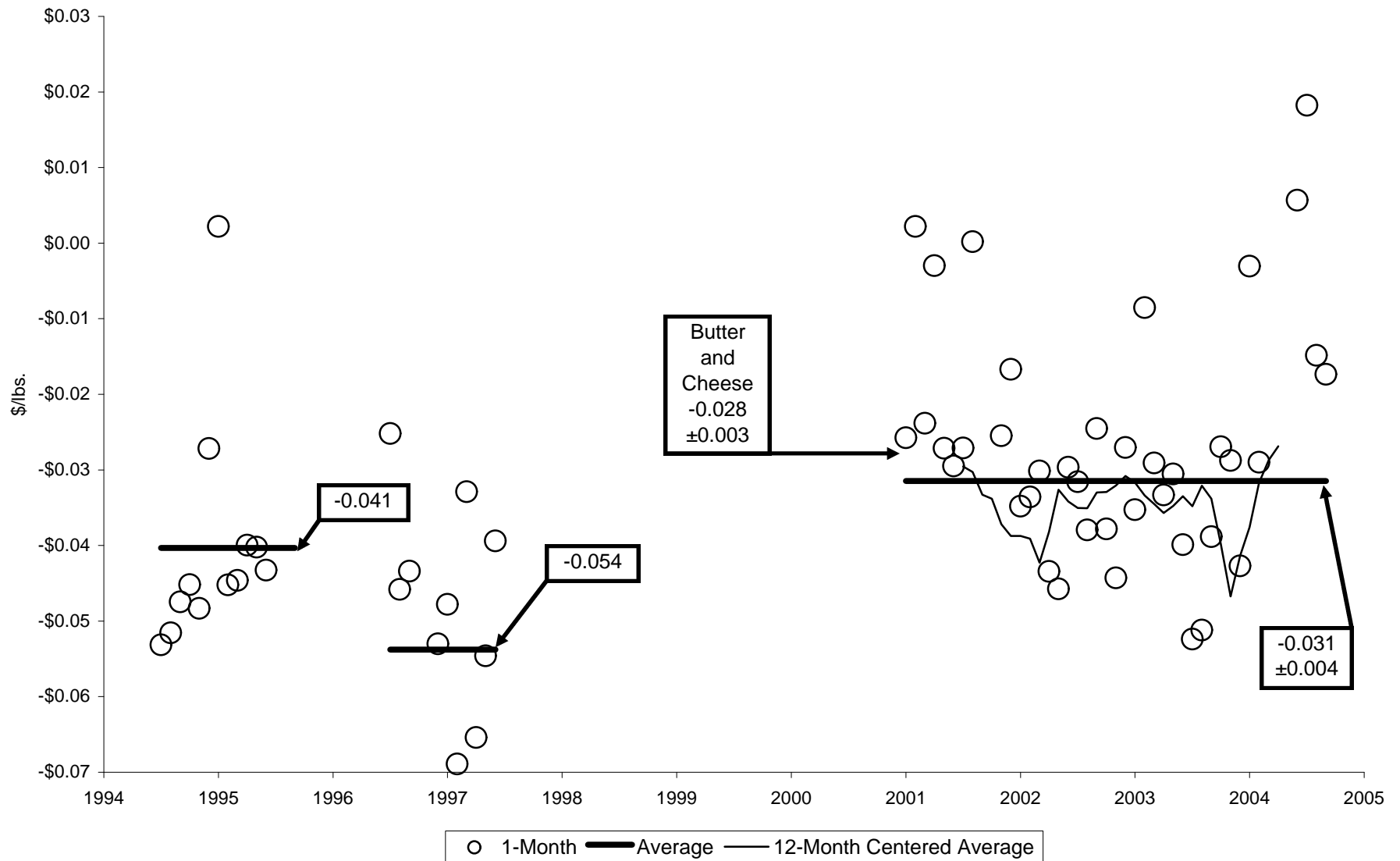


Figure 2 - BUTTER PRICE DIFFERENTIALS
Monthly California Weighted Average_t (1st-31st) less CME_t (26th-25th)



Cheese Prices
A Comparison of CME and California Prices
December 2004

Data Collection

Data was collected from five cheese plants, representing sales of block Cheddar cheese from January 2001 to October 2004. The five plants reported monthly sales volume (pounds) and sales revenue (dollars) for the 45 month period. The pounds and dollars were totaled across all five plants for each month. A monthly California weighted average price was calculated by dividing the total dollars by the total pounds. Each monthly average reflected sales from the 1st to the last day of a given month. As for the California weighted average price for NFDM (CWAP), prices for all months would have been influenced by the effects of any long-term contract sales.

These California prices were compared to the CME prices used in calculating the Class 4b cwt price. The CME Cheddar cheese prices were the "simple average of the 40 pound block Cheddar cheese price quotations for the last significant trading action for sale, offer or bid at the Chicago Mercantile Exchange falling between the period beginning the 26th day of the previous month and concluding the 25th day of the current month."

Data Analysis

The calculations for cheese was more complicated than that used for butter; analysis found that the current month's California cheese price reflected both the current month's (t) and the previous month's (t-1) CME cheese prices. For each of the 45 months, a weighted average of two months of CME cheese prices was subtracted from the California cheese price, specifically:

$$\text{Cheese Differential}_t = \text{California Cheese}_t - 55\% \text{CME Cheese}_t - 45\% \text{CME Cheese}_{t-1}$$

Results

The following table summarizes the results:

Summary of Results: CA less CME

Average $\pm 1\text{SE}$	-\$0.025 ± 0.003
Median	-\$0.028
Range	-\$0.036 to +\$0.024

Detailed monthly averages and differentials are presented in the attached *Table 2*. For comparison, data from previous studies in 1994-95 and 1996-97 are also included. The attached *Figures 3 and 4* graph the data from *Table 2* on a monthly basis.

Figure 3 shows the monthly averages for the California and CME cheese prices. In *Figure 4* the monthly differentials are shown as open circles. The averages for all three time periods (94-95, 96-97, 01-04) are shown as heavy lines with the actual average values given in the boxes. Rolling 12-month centered averages are shown as a thin line for the 2001-04 period. While the averages clearly differ among the three time periods, the 12-month centered averages do not indicate any temporal trend for the 2001-04 period.

The box labeled "Butter and Cheese" in *Figure 4* shows a combined average differential and standard error for both butter and cheese: $-\$0.028 \pm 0.003$; on a statistical basis there is no significant difference between the average cheese differential and the average butter differential. This may be happenstance rather than an actual trend. Historically (94-95, 96-97) the two differentials were very different.

Table 2 - California and CME Cheese Prices and Price Differentials
Various Monthly Periods, 1994 to 2004

CME California Differential California _t less CME _t				CME California Differential California _t less a _t less CME _t 55%CME _t less 45%CME _{t-1}			
1994 Jul	1.254	1.247	-0.006	2001 Jan	1.099	1.086	-0.013
Aug	1.276	1.301	0.026	Feb	1.181	1.093	-0.088
Sep	1.309	1.336	0.027	Mar	1.310	1.223	-0.087
Oct	1.328	1.326	-0.002	Apr	1.385	1.310	-0.075
Nov	1.272	1.286	0.014	May	1.589	1.456	-0.133
Dec	1.209	1.227	0.018	Jun	1.655	1.594	-0.061
1995 Jan	1.217	1.223	0.006	Jul	1.669	1.633	-0.036
Feb	1.274	1.275	0.001	Aug	1.698	1.645	-0.052
Mar	1.291	1.300	0.009	Sep	1.726	1.693	-0.033
Apr	1.214	1.230	0.016	Oct	1.407	1.563	0.156
May	1.201	1.207	0.006	Nov	1.237	1.201	-0.037
Jun	1.253	1.252	0.000	Dec	1.275	1.251	-0.024
Jul				2002 Jan	1.326	1.263	-0.063
Aug				Feb	1.225	1.275	0.050
1995 Sep				Mar	1.205	1.184	-0.021
				Apr	1.245	1.209	-0.036
1996 Jul	1.543	1.512	-0.030	May	1.210	1.211	0.001
Aug	1.630	1.607	-0.023	Jun	1.146	1.156	0.011
Sep	1.694	1.675	-0.019	Jul	1.076	1.087	0.011
Oct	1.593	1.617	0.024	Aug	1.156	1.100	-0.056
Nov	1.326	1.327	0.001	Sep	1.181	1.141	-0.040
Dec	1.251	1.235	-0.016	Oct	1.230	1.232	0.002
1997 Jan	1.259	1.225	-0.033	Nov	1.084	1.104	0.020
Feb	1.311	1.287	-0.024	Dec	1.129	1.100	-0.029
Mar	1.325	1.313	-0.012	2003 Jan	1.144	1.109	-0.035
Apr	1.245	1.241	-0.004	Feb	1.123	1.133	0.010
May	1.158	1.157	-0.001	Mar	1.069	1.063	-0.007
1997 Jun	1.166	1.157	-0.009	Apr	1.114	1.081	-0.033
				May	1.143	1.120	-0.023
				Jun	1.165	1.125	-0.040
				Jul	1.466	1.294	-0.172
				Aug	1.596	1.509	-0.086
				Sep	1.600	1.550	-0.050
				Oct	1.600	1.549	-0.051
				Nov	1.429	1.493	0.064
				Dec	1.345	1.402	0.057
				2004 Jan	1.303	1.276	-0.027
				Feb	1.369	1.325	-0.044
				Mar	1.744	1.533	-0.211
				Apr	2.140	1.971	-0.169
				May	2.063	2.094	0.030
				Jun	1.765	1.854	0.089
				Jul	1.428	1.546	0.119
				Aug	1.564	1.476	-0.088
				Sep	1.566	1.552	-0.014
				2004 Oct	1.517	1.509	-0.009

Figure 3 - CHEESE PRICES
Monthly California Weighted Average (1st-31st) and CME (26th-25th)

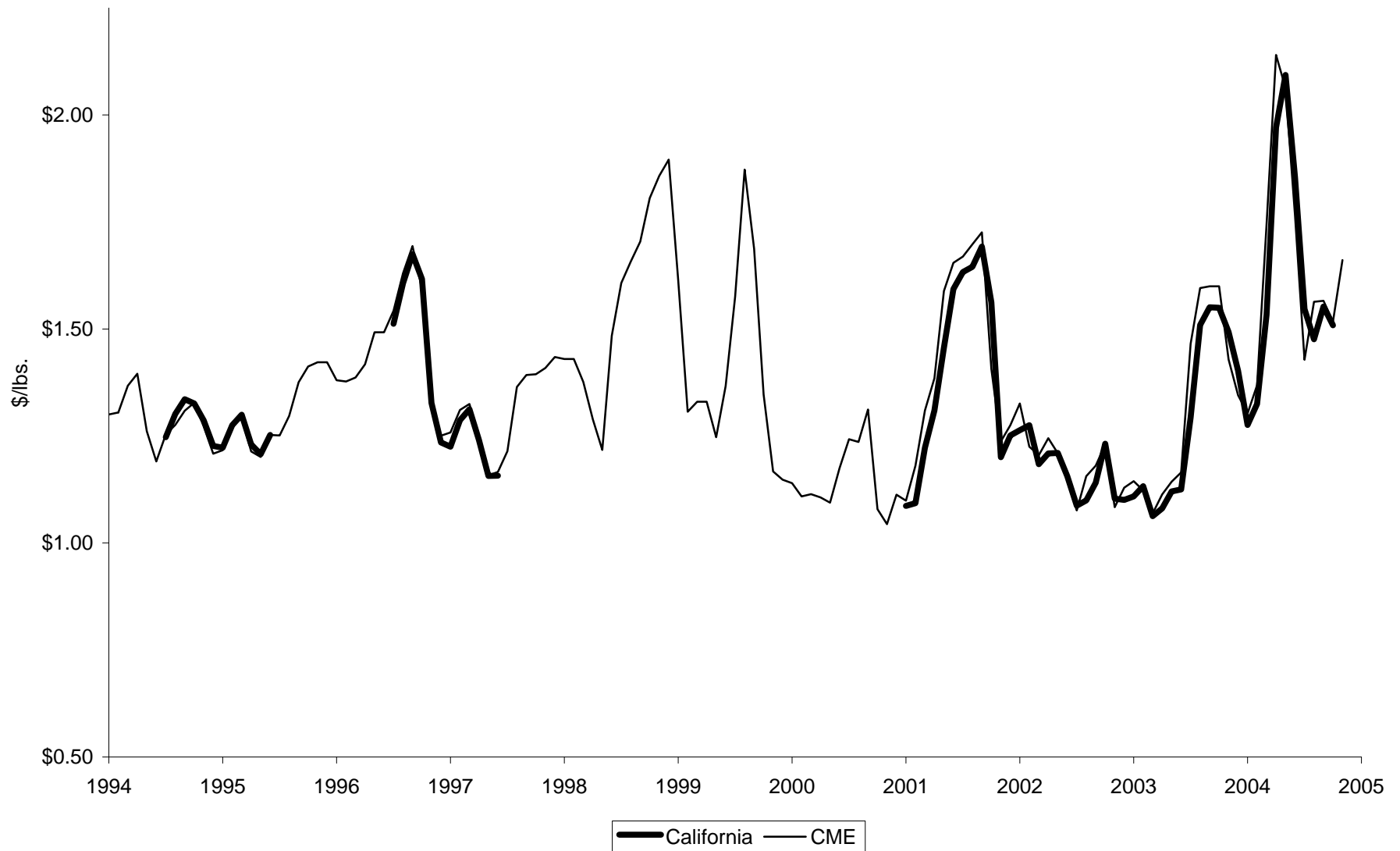


Figure 4 - CHEESE PRICES

Monthly California Weighted Average_t (1st-31st) less 55%CME_t (26th-25th) less 45%CME_{t-1} (26th-25th)

